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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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09/638,172 08/11/00 HAWKS

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MM91/0801

EXAMINER

NGO.H

ART UNIT

PAPER NUMBER

2831

DATE MAILED:

08/01/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/638,172

Applicant(s)
Hawks et al

Examiner
Hung V. Ngo

Art Unit
2831



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Jul 6, 2001
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-19 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 20) ☐ Other:

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DETAILED ACTION

Election/Restriction

Applicant's election without traverse of Group II, claims 11-19 in Paper No. 3 is acknowledged.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 11-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Marrs et al.

Marrs et al disclose (as best shown in Figs 3, 4) a printed circuit board (302, 402) including a die (301a, 401) attached to said printed circuit board; a hole (307, 407) in said printed circuit board, said hole being adjacent to said die, said hole being filled with a mold compound (303, 403), said mold compound surrounding and covering said die, wherein said mold compound is locked into said printed circuit board (re claim 11).

Re claim 12, wherein said hole is a through hole (Fig 4).

Re claim 13, wherein said hole is a blind hole (Fig 3).

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Re claim 14, a bond wire (306, 406), wherein a first end of said bond wire is bonded to a die bonding pad on said die and a second end of said bond wire is bonded to a printed circuit board bonding location on said printed circuit board.

Re claim 15, wherein said mold compound is selected from the group consisting of multi functional epoxy, novolac, and biphenyl resin (col 8, line 33)

Re claim 16, a layer of die attach (412) between said die and said printed circuit board (Fig 4).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marrs et al in view of Garbelli et al

The teaching of Marrs et al as discussed above does not disclose the printed circuit board comprising a first layer of metal below the die (re claim 17), the layer of die attach provided between said die and said first layer of metal (re claim 18), the first layer of metal comprises gold plated copper (re claim 19).

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Garbelli et al disclose a first layer of metal (140) below the die comprising gold plated copper (col 4, lines 42-48) and a layer of die attach provided between said die and said first layer of metal (Fig 1) to allow a better compatibility with the glue material and facilitating the heat transfer from the back of the device (col 4, lines 42-48).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the layer of metal or gold plated copper below the die and the layer of die attach of Marrs et al for the purpose of allowing a better compatibility with the layer of die attach and facilitating the heat transfer from the back of the die as taught by Garbelli et al.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung V. Ngo whose telephone number is (703) 308-7614. The examiner can normally be reached on Tuesday to Friday from 8:30 am to 06:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kristine Kincaid, can be reached on (703) 308-0640.

The fax phone number for this Group is (703) 305-3431 or (703) 305-3432.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

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Hung V. Ngo

July 30, 2001

Hung V Ngo